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OF THE

STATE PLANT BOARD

OF MISSISSIPPI

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A. & M. COLLEGE, MISSISSIPPI

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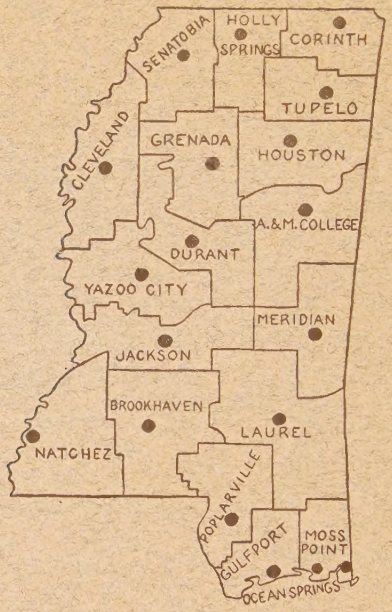

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Certified Irish Potato Seed Pay In 1927

By

H. H. Wedgworth, Asso. Plant Pathologist

During the spring of 1927 the State Plant Board and the Mississippi Experiment Stations at A. and M. College, Poplarville, and Raymond tested 52 samples of Irish potato seed of the Triumph and Cobbler varieties from various sources. Thirty-nine of these samples were from growers of certified seed in the northern and western states and 13 samples of Irish potato seed were purchased from seedmen in various parts of the State, but were not certified to be apparently free of diseases. Nine of the uncertified samples were heavily infected with mosiac and produced very low yields. The remaining four samples of uncertified seed produced much lower yields than the better strains of certified seed.

In the test at A. and M. College the highest yielding strain of certified Triumphs produced 116.95 bushels per acre compared to 64.04 and 57.30 bushels for the highest and lowest producing samples of uncertified Triumphs respectively. The best strain of certified Cobblers in this test produced 137.79 bushels per acre and the yield from one sample of uncertified seed was only 77.25 bushels per acre.

The results of these tests have been published in Circular No. 75 of the Mississippi Experiment Station and every potato grower and seed dealer should see a copy of this circular before purchasing seed for the 1928 crop. The Director of the Experiment Station,, A. and M. College, Mississippi, will send copies of this circular free to anyone interested. A list of certified seed dealers in Mississippi is being prepared by the State Plant Board and every dealer who plans to sell certified Irish potato seed for spring planting is urged to write the State Plant Board concerning the varieties and quantity of seed he is planning to sell.

Outstanding Wilt-Resistant Cotton Varieties

By D. C. Neal

The fungus which is responsible for cotton wilt is one of the soil-inhabiting fungi known as *Fusarium vasinfectum.* It is able to live in the soil for prolonged periods of time; in fact, for several years—thereby making rotation as a control measure unsafe and impracticable. The fungus gains entrance into the plant through the root system and later forms toxins in the plant which finally accumulate in sufficient quantity to cause the plant to wilt and die.

Wilt-resistant tests were made at the Mississippi Experiment Station in 1926 and 1927 on soil which had been artificially inoculated so as to insure more complete exposure of the plant roots to the wilt fungus. Since these experiments have been in progress, considerable difficulty has been experienced in finding resistant varieties which yield moderately well under varying conditions. Sometimes a variety is very resistant to wilt, but on the other hand, it may not be prolific, may be late maturing, or not satisfactory for areas where the boll weevil is a serious factor.

A list of varieties of cotton including both staple and short cottons which have shown considerable resistance in the tests during 1926 and 1927 and which have produced well on wilt-infested soil is given below:

Wilt-Resistant Staple Cottons

Variety and Seed Source:

Super-Seven—Coker Pedigreed Seed Company, Hartsville, South Carolina.

Lightning Express—Humphrey-Coker, Hartsville, South Carolina.

D. & P. L. No. 6—Delta and Pine Land Planting Company, Scott, Miss.

Watson's Long Staple—L. O. Watson, Florence, South Carolina.

Wilt-Resistant Short Cottons

Variety and Seed Source:

Cook, Rhyne—Rhyne Brothers, Benton, Alabama.

Dixie Triumph—L. O. Watson, Florence, South Carolina.

Miller—Mississippi Experiment Station, A. & M. College, Mississippi.

Cleveland 54—Mississippi Experiment Station, A. & M. College, Mississippi.

Triumph, Willis—Hinds County Farm Bureau, Jackson, Mississippi.

A more detailed report on these tests is now being published and will appear later as a bulletin from the Mississippi Experiment Station.

Wilt-Resistant Tomato Varieties In 1927

By

H. H. Wedgworth, Asso. Plant Pathologist

Fusarium wilt causes an annual loss of 15 to 20 per cent of the tomato crop in the southern states and frequently, 75 to 100 per cent of the plants are destroyed in some fields. The symptoms, cause, and control of this disease are discussed somewhat in detail in the Quarterly Bulletin of the State Plant Board, Vol. 4, pp. 8-24, April, 1924.

Wilt-resistant tomato varieties have been recommended and used in Mississippi for several years for the control of this disease. The success of this method of control may be measured indirectly by the increasing number of requests for samples of wilt-resistant tomato seed which have been distributed by the State Plant Board and the Mississippi Experiment Station during the past 5 or 6 years. During this period, about 40,000 samples have been distributed to truckers and gardeners throughout the state. With these requests for seed, hundreds of in-

quiries concerning *the best wilt-resistant variety of tomatoes* have been received. To answer this question, fourteen varieties of tomatoes were planted on both infested soil and soil free of the wilt organism at the Mississippi Experiment Station in 1927. The tomatoes were staked and pruned, given clean cultivation, and harvested as soon as ripe.

*On the wilt-free soil, the varieties produced the following tons of tomatoes per acre: *Louisiana Pink* 7.6, *Marglobe* 7.3, Gulf States 7.1, *Kanora* 7.1, *Louisiana Red* 6.8, *Norton* 6.8, Stone 6.5, Perfection 6.1, Globe 6.0, *Marvelosa* 5.8, Detroit 5.4, *Marvel* 5.0, *Marvana* 5.0, *Columbia* 4.4.

On the infested soil the order of productiveness was as follows: *Louisiana Pink* 5.0, *Marglobe* 4.9, *Louisiana Red* 4.7, *Norton* 4.4, *Marvel* 4.0, *Marvana* 3.7, *Marvelosa* 3.3, *Kanora* 3.2, Globe 3.1, Gulf States 2.7, *Columbia* 2.6, Perfection 2.2, Stone 0.8, Detroit 0.7. The non-infested soil was slightly more fertile than the infested soil which no doubt accounts for some of the difference in yield between the infested and non-infested plantings.

The details of this experiment will be published at an early date in a circular by the Mississippi Experiment Station.

Field Cricket Injury To Strawberries

By

P. K. Harrison, Junior Entomologist
U. S. Bureau of Entomology

Strawberry culture in southern Mississippi is growing rapidly and, if no serious obstacles develop, promises to become one of the leading agricultural industries. Already, however, several insect pests are attacking both the plant and the fruit. The most destructive insect

*The varieties in italics are considered wilt-resistant in varying degrees.

to attack the fruit is the field cricket, known to entomologists as *Gryllus assimilis* Fabr. This is the common brownish-black cricket familiar to every farmer in the state. (Fig. 1.)

FIG. 1.—The common field cricket, *Gryllus assimilis*

Complaints of cricket injury have been received by the State Plant Board from Wiggins, Laurel, Picayune, and other places. Most of these complaints from the vicinity of Picayune were received early in the harvesting season, although observations proved that the injury is just as severe during the entire season as it is during the first few weeks. This apparently extended injury is probably due to the fact that during the first part of the

FIG. 2.—Strawberries damaged by crickets.

season only comparatively few berries get ripe and the damage is more noticeable.

The crickets damage the strawberries by gnawing holes in the berries, as illustrated in figure No. 2. When green berries are gnawed they are not marketable as a first-class product. The ripe berries that are damaged are a total loss.

Were it not for the mulch necessary for producing a clean, marketable berry, it is believed that no damage would be done by these insects. The mulch most commonly used in southern Mississippi is pine straw. This makes an ideal shelter for the crickets. With good shelter and plenty of berries to feed on, the crickets multiply rapidly and soon can be seen in large numbers.

No definite measures have been worked out for the control of crickets in strawberry fields. It has been observed that strawberries planted in new land with the rows 4 feet apart, and where grass and weeds were kept down, were not damaged to any great extent; whereas plants set in old land where strawberries were grown the previous year, and where grass and weeds were allowed to grow, were severely damaged.

It is recommended, in view of the lack of further information, that growers, insofar as possible, plant in new land in rows 3 1-2 to 4 feet apart, use as little mulch as possible, and keep grass and weeds out during the entire growing and harvesting seasons.

Gladiolus Scab

By
H. H. Wedgworth

The scab disease of the gladiolus is one of the most important leaf and corm diseases of this plant. It has been reported from practically every section of the United States and probably occurs wherever gladioli are grown. The increasing interest in gladioli in this State is demanding quite a large importation of corms each year. Since

a large percent of the corms of many nurseries are infested with scab, this paper is intended primarily to point out the danger of using diseased corms and to report on a preliminary experiment for the control of scab.

Symptoms. The lesions may appear on any part of the leaf but are usually more abundant on the fleshy, basal region. Small reddish-brown, slightly raised specks and usually in large numbers are the first noticeable symptoms of the disease. By enlarging and coalescing, these small spots may produce large dead areas on the leaves. The entire basal portion of the plant may be invaded by the bacteria causing a soft or dry rot depending upon the amount of moisture in the soil. After the tissues in this region are destroyed, the plants may fall over, bending at or near the surface of the soil.

The corms from diseased plants are usually infected. The infection may be so slight that it will escape attention or so severe that the shucks are practically destroyed and the corm covered with circular, sunken spots. In its

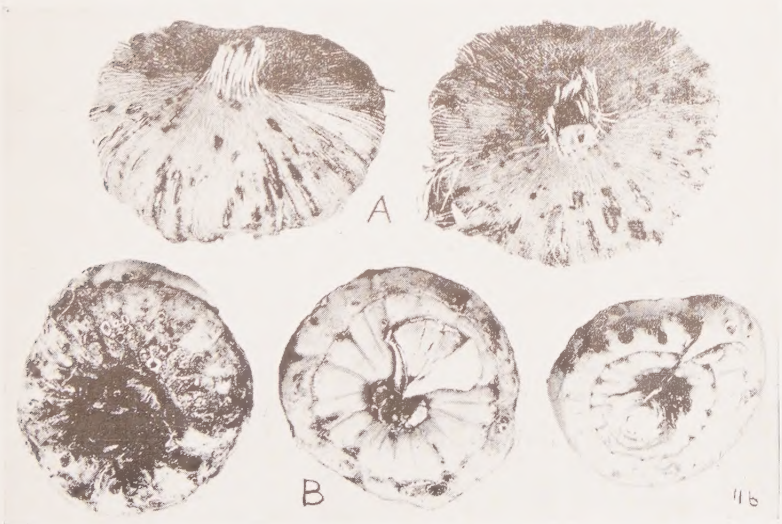

FIG. 3.—Gladiolus scab: A, on shucks; B, on corms.

early stages, the lesions on the shucks are pale yellow to brown in color and circular to oval in shape. These small spots enlarge to more or less elongated, dark-brown to charcoal black spots (Fig. 3,A.). The tissues in these spots are very brittle and in the advanced stages are often split.

In most cases there is a direct relation between shuck and corm lesions, the corm infection occurring just below the shuck infection. The lesions on the corms are at first pale yellow, water-soaked, circular spots becoming yellow-brown or nearly black. The epidermis or outer coating of the corms in these lesions splits or breaks and eventually the lesions become shallow depressions surrounded by a definite and somewhat elevated margin (Fig. 3, B). If the spots are numerous they may coalesce to form large, irregular, sunken areas.

Cause. The disease is caused by a microscopic organism known as *Bacterium marginatum*. The first lesions in the spring are caused by the bacteria that have been carried over the winter in the diseased corms or in the soil. In these lesions the bacteria increase in large numbers and may be washed or splashed to other parts of the plant or to healthy plants and cause secondary infections. Warm, moist weather is most favorable for the development of this organism.

Control. It is known that the organism can remain virulent for at least one year in the soil; therefore, crop rotation should be one of the first considerations in the control of this disease as well as other gladiolus diseases. The next step in the control of the disease is to use clean corms. Slightly scabbed corms may be used if they are thoroughly disinfected just before planting. Apparently clean corms which may be infected with parasitic organisms should also be disinfected. Badly scabbed corms should not be used. To determine the best disinfectant for this purpose, a rather extensive preliminary experiment was conducted during 1927 at the Mississippi Experiment Station.

Experiment for the Control of Scab During 1927

The shucks of 624 slightly scabbed corms were divided into 26 lots of 24 each. Each lot of 24 corms weighed 309 grams (1 pound=454 grams). Six lots of untreated corms were used as checks and four lots were treated with each disinfectant according to the outline given in Table 1. The corms were planted in beds of a rich sandy loam soil on April 2 and the new corms were harvested on September 16. The shucks were removed two days later and the corms were sorted by hand and weighed. The results from this experiment are given in Table 1.

TABLE I.

Influence of Treating Gladiolus Corms With Various Disinfectants on the Control of Scab

Treatment	Length of treating	Percent Clean corms	% Scabbed corms		Average weight in grams per plot	
			Slightly	Badly	Cormels	Corms
*Metcuric chloride 1-1000	30 min.	56.3	39.8	3.9	45.0	454.4
*Semesan 1-400	12 hrs.	54.8	43.3	2.9	48.3	478.5
*Semesan 1-400	2 hrs.	34.7	50.5	14.9	51.9	481.3
*Dipdust 1-10	1 min.	45.8	46.9	7.3	47.0	437.6
*Dipdust 1-20	1 min.	10.4	65.6	24.0	43.1	440.3
XCheck	———	13.1	51.7	35.2	30.0	349.2

*Average of four plats. XAverage of six plats.

Although the figures presented in Table 1 are the results of only one season's work, the writer believes that the consistent increases in number and size of corms from the thoroughly disinfected corms over those which were untreated give these data some significance. The increased weight of the small corms or cormels also indicates the value of these treatments.

In choosing between bichloride of mercury and Semesan for 12 hours, the grower must consider the cost and convenience of the disinfectants. Bichloride of mercury is much cheaper but must be used in earthenware or wooden containers.

Recommendations. (1) Remove the shucks from

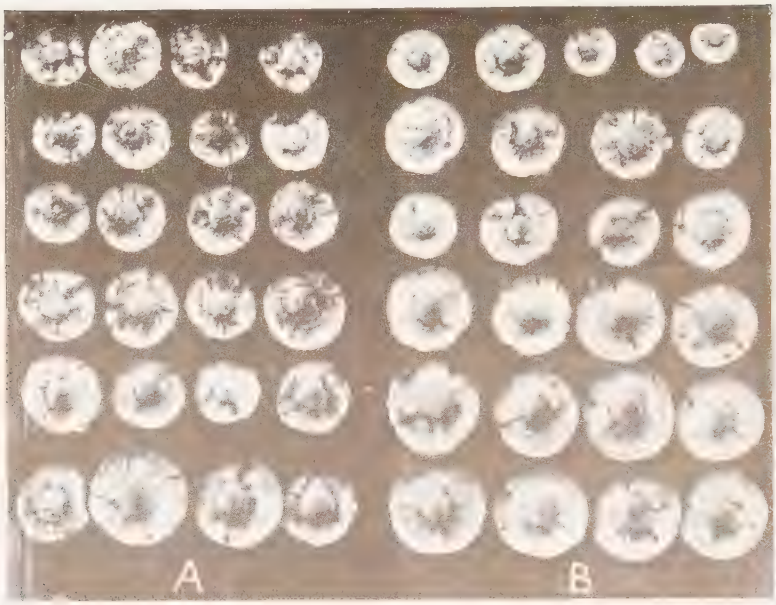

FIG. 4. Effect of disinfecting corms before planting on the development of scab: A, Untreated, B, bichloride of mercury, 1 to 1000, for 30 minutes.

the corms before planting as they are probably more serious as disease carriers than the corms.

(2) Select disease-free corms and treat in a solution of one ounce of bichloride of mercury in 8 gallons of water for one hour. A one hour treatment is being recommended because it has been determined that corms can be treated for two hours without injury, and because one hour will permit greater penetration of the chemical than thirty minutes.

(3) Practice a system of crop rotation in which gladiolus will not appear on the same soil more than once in three or four years.

THE QUARTERLY BULLETIN

STATE PLANT BOARD OF MISSISSIPPI

Devoted especially to the prevention, eradication, and control of insect pests and plant diseases affecting the agricultural and horticultural interests of Mississippi.

R. W. HARNED, Entomologist ..... Editor
D. C. NEAL ..... Associate Editor
HUNTER H. KIMBALL ..... Associate Editor
CLAY LYLE ..... Managing Editor

Sent free to all citizens of Mississippi on request. Offered in exchange for publications of the Federal and foreign governments and experiment stations, entomological and mycological journals, agricultural and horticultural papers, and other publications of a similar nature.

Entered as second-class matter July 9, 1921, at the post office at A. & M. College, Mississippi, under the Act of June 6, 1900.

A CRITICAL TIME

During the past few years the work of the State Plant Board has grown to enormous proportions, as more and more people have each year availed themselves of the help it offered. In every phase of activity the demands for service are now many times greater than a few years ago. A few concrete examples are given herewith:

In 1920 there were only 73 certified sweet potato growers in Mississippi with a total of 134 acres. In 1927, Chickasaw County alone with 162 growers and 471 acres has over twice the number of growers and more than three times the acreage of the entire State in 1920. Five other counties in 1927 have exceeded the total 1920 acreage of the State, Tippah having 250 acres, Calhoun 298, Lauderdale 144, Adams 207, and Lee 223. In 1927 there are 1916 certified growers with 4,212 acres, or more than thirty times the acreage of 1920. Furthermore, the sweet potato inspection service has been made much more efficient in detecting and preventing disease than in 1920.

The nursery business in Mississippi has grown rapidly during the past few years, further multiplying the duties of Plant Board inspectors. At the beginning of 1920 there were only 92 nurseries in Mississippi, but by the fall of 1927 this number had increased to 254, with about four times the acreage of 1920. During 1921 the Plant Board inspected only 5,067,358 plants in Mississippi nurseries in comparison with 19,909,061 plants in 1926. The number of nurseries in other states shipping into Mississippi has also more than doubled during the same time, thus greatly increasing the work of inspecting shipments as they arrive at their destinations.

The Plant Board is now assisting dozens of towns every year with Argentine Ant control campaigns. In 1920 only 4 small campaigns were conducted, while in 1926 the Board assisted 42 places with campaigns. During 1927 the number will probably be equally as large, including the extensive campaign at Meridian where 100,000 cans of poison were distributed.

In other phases of Plant Board activity the demands of the people for help have multiplied with equal rapidity. Hundreds of people are now calling for assistance in fighting field, garden, and orchard pests where only dozens were requesting aid a few years ago. Every time an orchard is planted, or a pecan or orange grove is put out, the responsibility of the Plant Board is increased to that extent. As the agricultural and horticultural development of Mississippi progresses, the duties of the Plant Board will increase correspondingly.

The Dark Side of the Picture

The picture has a dark side, however. While the sweet potato inspection work has increased **thirty-fold,** the nursery inspection work more than **quadrupled.** Argentine Ant campaigns multiplied **more than ten times,** and other lines of Plant Board work **increased** in like proportion, the appropriations of the Legislature for the support of the Plant Board have **decreased. The sum appropriated for 1927 is only two-thirds the amount appropriated for 1921.**

The State Plant Board is asking the Legislature for an adequate appropriation for 1928 and 1929. With a steadily increasing amount of work to do, the Plant Board cannot hope to give the same kind of service it has given in the past without an increased appropriation. Either some lines of work must be abandoned altogether, or else the inspection standards must be lowered so the small force available can cover the field.

For example, the sweet potato inspection work has practically grown to the point where it must be abandoned entirely, or the number of inspections reduced, if more inspectors are not employed. To give it up entirely means that Mississippi seed and plant growers will find it impossible to ship into several states that require inspections. To lower the inspection standards will greatly hurt the splendid reputation Mississippi potatoes and plants now have in other states, and may result in other states refusing to recognize our inspection certificates at all. The same situation exists in the nursery inspection work.

This is a critical time indeed for farmers, nurserymen, potato seed and plant growers, orchard owners, and others whose interests will suffer if Mississippi does not make suitable provision for protection from injurious insect pests and plant diseases.

APIARY INSPECTION REPORT

For the Period July 1-September 30

County	Frame Hives	Box Hives	European Foulbrood	American Foulbrood
Bolivar	80	——	——	——
Coahoma	95	6	——	——
Jackson	10	——	——	——
Sunflower	5	——	——	——
Washington	384	2	13	5
TOTAL	574	8	13	5

Due to the pressure of other work very little time could be given to apiary inspection during this quarter. The five colonies infected with American Foulbrood were promptly burned—hives, bees, combs, and honey.

NURSERY INSPECTION REPORT

For Period July 1-September 30, 1927

Number of nurseries inspected		236
Acreage in nurseries inspected		1208.22
AMOUNT OF NURSERY STOCK INSPECTED:		
Grafted and budded pecans	514,076	
Seedling pecan	1,043,257	
Total pecan		1,557,333
Citrus trifoliata	338,955	
Orange	256,711	
Grapefruit	3,949	
Lemon	340	
Kumquat	2,578	
Total citrus		602,533
Apple	32,855	
Pear	125,525	
Peach	57,606	
Fig	7,657	
Grape	27,675	
Plum	5,823	

Japanese Persimmon	12,975	
Strawberry	1,520,000	
Mulberry	150	
Blackberry	1,000	
Quince	500	
Miscellaneous fruit	77	
Total fruit (citrus excluded)		1,791,843
Kudzu	37,000	
Total kudzu		37,000
Rose	109,147	
Miscellaneous ornamental	1,258,278	
Total ornamental		1,367,425
Grand total of plants inspected during quarter		5,356,134

QUARANTINE INSPECTION REPORT

For Period July 1-September 30, 1927

Geo. F. Arnold, Quarantine Insp.

SHIPS AND VESSELS INSPECTED:		
From foreign ports	6	
From U. S. ports	3	
Total	9	
PARCELS INSPECTED:		
Arriving by land, express, freight, wagon etc.		
Passed	33	
Treated and passed	0	
Returned to shipper	0	
Contraband destroyed	0	
Total	33	
ARRIVING BY MAIL:		
Passed	36	
Treated and passed	1	
Returned to shipper	0	
Contraband destroyed	1	
Total	38	
Grand total of parcels inspected		71
Total parcels passed	69	
Total parcels treated and passed	1	
Total parcels returned to shipper	0	
Contraband destroyed	1	
Grand total	71	

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(In active service September 30, 1927)

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D. C. Neal, Plant Pathologist.
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A. L. Hamner, Consulting Entomologist, (Miss. Experiment Station).
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*In cooperation with the United States Department of Agriculture.